#6/2-29-03 Jones

Patent
Attorney's Docket No. 040071-173

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	
Johan NILLSON	Group Art Unit: 2133
Application No.: 09/598,210	Examiner: MOORE, William P.
Filed: June 21, 2000	Confirmation No.: 8106
For: BIT ERROR RATE ESTIMATION	

RESPONSE TO SECOND OFFICE ACTION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is a complete response to the Office Action mailed on April 24, 2003. Claims 1-18 remain pending in the application. Favorable reconsideration is respectfully requested in view of the following remarks.

The indication that claims 4, 8, 9, 13, 17, and 18 define patentable subject matter is noted with appreciation.

Claims 1-7, 10-12 and 14-16 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Wan et al. (WO 99/49610). This rejection is respectfully traversed.

At the outset, it is noted that dependent claim 4 has been included in the list of rejected claims under this ground of rejection, but that on the "Office Action Summary" page, claim 4 is indicated as being merely "objected to", and in paragraph 13 of the Office

Action (see page 6), it is expressly stated that "Claim 4 ... would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims." In view of the fact that the stated basis for allegedly rejecting claim 4 relies exclusively on a feature that is not recited in claim 4 but which is instead recited in claim 5 (i.e., the error detection technique including calculating a cyclic redundancy check), Applicant assumes that the mentioning of claim 4 in this rejection was made in error. In case there was an intention to reject claim 4 under Section 103 in this Office Action, such rejection is traversed on the basis that the Office has failed to make any arguments addressing the feature actually recited in claim 4, and that the prior art of record fails to disclose or suggest such a feature.

Turning now to the substantive issues raised in this ground of rejection, the invention relates to techniques for estimating a Bit Error Rate (BER) associated with received data. As explained in the Background section of the application, error correction coding is usually applied to information that is to be transmitted so that errors in the received data may be corrected. However, error correction coding is not infallible -- decoded bits do occasionally contain errors.

This can be problematic for estimating the BER because conventional techniques utilize a process whereby decoded bits are re-encoded and then compared with the originally received encoded bits. Observed differences between these two are taken to indicate bit errors that had been corrected in the decoding process. Statistics utilizing the number of these bit errors are used to generate the BER. This is an accurate measure of the number of bit errors when all of the bit errors are correctable. However, if the decoded

bits include one or more bit errors, the resultant BER estimate can be grossly over- or under-estimated for the reasons more fully explained on page 5 of the application. This can result in catastrophically inappropriate responsive power control measures being taken in a communication system.

This problem is addressed by the invention. Claim 1 defines a method of generating a bit error rate estimate for a received signal, which method comprises using an error correction decoding technique to generate a block of decoded bits from the received signal, and using an error detection technique to determine whether at least one of the decoded bits from the block of decoded bits has an erroneous value. If none of the decoded bits from the block of decoded bits has an erroneous value, then the bit error rate estimate is calculated from the received signal. However, if at least one of the decoded bits from the block of decoded bits has an erroneous value, then the bit error rate estimate is set equal to a value that is based on a previously calculated bit error rate. In this way, the bit error rate estimate can more accurately reflect real conditions on the channel.

Independent claim 10 similarly defines an apparatus for generating a bit error rate estimate for a received signal, which apparatus includes logic that sets the bit error rate estimate equal to a value that is based on a previously calculated bit error rate if at least one of the decoded bits from the block of decoded bits has an erroneous value.

As explained in MPEP § 2143, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a

reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The MPEP further reminds that the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure.

The Office has failed to make out a *prima facie* case of obviousness with respect to independent claims 1 and 10 at least because Wan et al. fail to disclose or suggest setting a bit error rate estimate equal to a value that is based on a *previously calculated* bit error rate if at least one of the decoded bits from the block of decoded bits has an erroneous value.

The Office acknowledges Wan et al.'s failing, but observes that Wan et al. at page 2, lines 22-24 disclose that the BER is only calculated if there is a PASS result from block decoding. From this, the Office concludes that "to one of ordinary skill in the art this suggests that the BER is not updated when there is a FAIL condition, thus the previous BER would be used."

Contrary to requirements set out by the Court of Appeals for the Federal Circuit, the Office's conclusion is not supported by objective evidence. (See, e.g., *In re Lee*, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002); and the discussion of the need for objective evidence in MPEP § 2143.01 at 2100-125 (Rev. 1, Feb. 2003).) The fact is, Wan et al. are completely silent with respect to what happens in the event of a FAIL condition. Given this as the starting condition, there is no reason to assume that one of ordinary skill in the art at the time of the invention would have used a previously calculated BER. To the contrary, the prior art of record shows that a *preset*, *static* (i.e., fixed) BER value would be used under these conditions -- see the discussion of the Abe reference, below.

Since nothing in the prior art suggests using a previously calculated BER, it appears that the Office's conclusion was reached by performing a hindsight analysis, in which Applicants' own disclosure was used to provide the elements missing from the prior art. It is well-established, however, that hindsight analyses are improper in the determination of obviousness. (See, e.g., *In re Fritch*, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992) ("The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. . . . It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious."))

For at least the foregoing reasons, independent claims 1 and 10, as well as the dependent claims 2-3, 5-7, 11-12 and 14-16, are believed to be patentable over the Wan et al. patent. It is therefore respectfully requested that the rejection of these claims under Section 103 be withdrawn.

Claims 1, 2, 5, 6, 10, 11, 14, and 15 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Abe (EPO 0,600,095 A1). This rejection is respectfully traversed.

The Office recognizes that Abe fails to disclose setting a bit error rate estimate equal to a value that is based on a *previously calculated* bit error rate if at least one of the decoded bits from the block of decoded bits has an erroneous value. However, the Office concludes that "it would have been obvious for a person of ordinary skill in the art to

modify Abe such that preset bit error rate of Abe has been previously estimated, i.e., calculated."

The Office's speculation appears to contravene the system actually described in Abe, whereby the preset value (which is used when decoded bits have an erroneous value) is merely *selected*, and appears to be static. For example, see Abe at column 14, lines 3-8: "With EDF=0, the input decoded signal s21a is outputted intactly (step 503), while with EDF=1, there are outputted the number of errors and the bit error rate, *which have been preset to between 0 and 50%*, respectively (step 504)." (Emphasis added.) The Abe document provides no guidance with respect to how one is to select a suitable preset value. It is certainly not inherent in Abe that the selection of the particular preset value is based on any calculation -- the designer could, for example, simply pick a static value that he or she considers to be suitable in general, without any consideration for the actual channel conditions being encountered. Thus, the prior art of record fails to provide not only the missing feature (i.e., a previously *calculated* value to be used as the bit error rate estimate) but also the motivation necessary for modifying Abe to match the embodiments defined by the rejected claims. Without any such prior art to provide these missing pieces, the Office is left to rely only on Applicant's own disclosure in an impermissible hindsight analysis. The Office is reminded of the need for *objective* evidence in support of its rejection under Section 103. (See the discussion above with respect to the rejection based on the Wan et al. reference.)

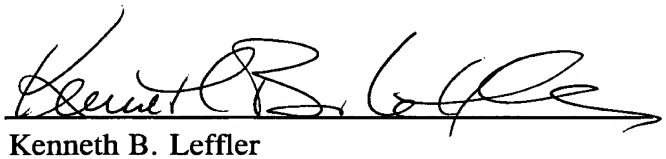
For at least the foregoing reasons, independent claims 1 and 10, as well as the claims 2, 5, 6, 11, 14, and 15 which variously depend therefrom, are believed to be

patentably distinguishable over the Abe reference. Therefore, it is respectfully requested that the rejection of these claims under Section 103 be withdrawn.

The application is believed to be in condition for allowance. Prompt notice of same is earnestly solicited.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By: 

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Date: July 23, 2003

2133

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For: BIT ERROR RATE ESTIMATION	)	
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	)	
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AMENDMENT/REPLY TRANSMITTAL LETTER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Enclosed is a reply for the above-identified patent application.

[ ] A Petition for Extension of Time is also enclosed.

[ ] A Terminal Disclaimer and the [ ] $55.00 (2814) [ ] $110.00 (1814) fee due under 37 C.F.R. § 1.20(d) are also enclosed.

[ ] Also enclosed is/are _____.

[ ] Small entity status is hereby claimed.

[ ] Applicant(s) requests continued examination under 37 C.F.R. § 1.114 and enclose the [ ] $375.00 (2801) [ ] $750.00 (1801) fee due under 37 C.F.R. § 1.17(e).

[ ] Applicant(s) requests that any previously unentered after final amendments not be entered. Continued examination is requested based on the enclosed documents identified above.

[ ] Applicant(s) previously submitted ___, on ___, for which continued examination is requested.

[ ] Applicant(s) requests suspension of action by the Office until at least ___, which does not exceed three months from the filing of this RCE, in accordance with 37 C.F.R. § 1.103(c). The required fee under 37 C.F.R. § 1.17(i) is enclosed.

[ ] A Request for Entry and Consideration of Submission under 37 C.F.R. § 1.129(a) (1809/2809) is also enclosed.

[X] No additional claim fee is required.

[ ] An additional claim fee is required, and is calculated as shown below:

AMENDED CLAIMS					
	NO. OF CLAIMS	HIGHEST NO. OF CLAIMS PREVIOUSLY PAID FOR	EXTRA CLAIMS	RATE	ADD'L FEE
Total Claims		MINUS =		× $18.00 (1202) =	
Independent Claims		MINUS =		× $84.00 (1201) =	
If Amendment adds multiple dependent claims, add $280.00 (1203)					
Total Claim Amendment Fee					
If small entity status is claimed, subtract 50% of Total Claim Amendment Fee					
TOTAL ADDITIONAL CLAIM FEE DUE FOR THIS AMENDMENT					

[ ] A total fee in the amount of $ _____ is enclosed.

[ ] Charge $_____ to Deposit Account No. 02-4800.

The Director is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17, 1.20(d) and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800. This paper is submitted in duplicate.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

Date: July 23, 2003

By: _____
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